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Abex Corp
MOD031003767
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10.19.93

October 19, 1993

Dr. Peter Culver, P.E.
U. S. Environmental Protection Agency
Region VII, Superfund Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

Project: ARCS Regions VI, VII & VIII, Contract No. 68-W9-0021
Work Assignment No. 024-7JZZ
DCN: 7760-024-A8-RT-CWVP
Subject: Site Inspection Prioritization Report (SIP) for the Abex Corporation, (CERCLIS ID No. MOD031003767)

Dear Dr. Culver:

CDM Federal Programs Corporation (CDM Federal) is pleased to submit the Site Inspection Prioritization (SIP) report for the Abex Corporation site in Wellston, Missouri.

This project was initiated to evaluate the completeness of information currently available on the Abex Corporation. A Preliminary Assessment (PA) of the site was completed by the Missouri Department of Natural Resources (MDNR) on August 16, 1984. On March 12, 1990, a sampling event was conducted at the site as a part of PA/SI activities by MDNR. A report was generated which presents data from this activity. Samples collected from this event were analyzed for volatile organics, PCBs, pesticides, and base neutrals. The 12 samples collected by MDNR confirmed the presence of PCBs, volatiles and metals within and outside of the facility boundaries.

Site Location

The Abex site is located at 6600 Ridge Avenue within the city limits of Wellston, in St. Louis County, Missouri (Figure 1). The site occupies 11.5 acres. The approximate geographic coordinates of the site are 38°40′ 38" latitude and 90° 17′ 50" longitude. The Abex site can be reached by taking Interstate 70 east from St. Charles, Missouri or west from St. Louis City, Missouri, to Highway 170. Take 170 south to Page Avenue and Page east to Ogden Avenue. Turn left and go north on Ogden Avenue to Ridge Avenue. Turn left on Ridge Avenue and go west one block to the site.

Site History and Operation

The facility was used as a secondary steel foundry from 1923 to 1982. During operation, the plant manufactured steel castings of all types and sizes. The processes included melting scrap steel in two electric furnaces, pouring the molten metal into sand molds, shaking out the castings, annealing in the three gas fired annealing furnaces, rough grinding, fine grinding and machining (MDNR 1990). Figure 2 provides an overview of the Abex site.

American Breakshoe Company - American Manganese Steel Division has owned the site since 1923. On April 26, 1966, American Breakshoe Company changed its name to Abex Corporation. In 1968, Abex Corporation merged with Illinois Central Industries, Inc. and became a wholly-owned subsidiary of Illinois Central Industries, Inc. The plant operated as a secondary steel foundry (SIC code 3325) from 1923 until its closure on March 26, 1982. The plant operated as a job shop manufacturing steel castings weighing from 0.5 lb up to 10,000 lbs. The plant during normal conditions operated on three shifts a day and five days a week. The plant had employed a maximum of 300 workers. In January 1982, the plant had 212 employees (MDNR 1990).

Previous Investigations

On August 16, 1984, a Preliminary Assessment (PA) of the Abex Corporation was initiated by the Missouri Department of Natural Resources (MDNR). The following conclusions and recommendations were made in August of 1984 based on information obtained during the PA investigation.

PA Conclusions

This site, in its present condition, does not pose a significant threat to public health or the environment and should be assigned a low priority for further investigation. This conclusion is based upon the following considerations:

- The amount of waste material in the sand dump area appeared to be minimal.
- A good growth of vegetation was observed on the sand dump area. No vegetative stress was observed at the site.
- No formal landfilling operation was performed at the site.
- Due to conflicting analytical data presented by two independent labs, it is uncertain at the present time whether the company-generated hazardous waste at this site.

PA Recommendations

MDNR recommended that further agency action may require sampling of the sand dump area which would aid in determination of the presence or absence of hazardous wastes at this location. At the time of the PA, it was uncertain whether Abex Corporation generated any hazardous wastes at this site due to conflicting data from two independent laboratories. As stated in the PA recommendations by MDNR, Abex Corporation could have performed this sampling voluntarily if formally requested to do so by MDNR/EPA at that time.

On October 22, 1986, REACT (Ryckmans Emergency Action & Consulting Team) entered into a contract with Abex Corporation to implement the following:

- Conduct a site inspection of the property located at 6600 Ridge Avenue, Wellston, Missouri, to assess the compliance status of the facility.

- Produce an engineering evaluation report and preliminary corrective action options.

- Provide a preliminary scope for additional services and/or needed corrective action.

On Tuesday, November 4, 1986, REACT performed an onsite inspection of the Abex plant located at 6600 Ridge Avenue in Wellston, Missouri. The following six recommendations were made as a result of this inspection:

- Fine dust in the manufacturing building should be sampled to verify that the material is not subject to disposal as a hazardous waste.

- Various sumps having oil/water mixture should be analyzed for presence of PCBs, RCRA heavy metals, corrosiveness, reactivity, phenols, pH, and flash point (per disposal facility and MDNR request. Following analysis, liquids should be separated and disposed of in an appropriate manner.

- Various drums/pails should be sampled and materials disposed of in an appropriate manner.

- The sand disposal area (landfill), located in the rear southwest corner of the property, should be investigated for the presence of contaminated materials (fines and/or oil). If contamination is detected, the materials should be excavated and disposed of in an appropriate manner.

- The insulation in the office building and boiler room should be sampled and analyzed for asbestos content.

- Underground tanks should be registered with MDNR and investigated to determine if they present any environmental liabilities.

In response to REACT's recommendations, REACT was authorized to perform sampling for ultimate disposal of drums and containers located within the Abex facility and drums in the landfill area. The following list of activities were performed by REACT:

- Plant Building and Materials Sampling (November 11, 1986).

  The plant buildings were inspected and 83 drums, buckets, and pails containing materials were collected and staged in the shipping building. Containers were given sequential numbers and samples were collected for analysis. A large number of surface containers, in various stages of burial, were observed in the landfill area.

  Samples of the oil and water in the pits inside and outside the machine shop and other storage tanks were collected for analysis.

Samples from accessible underground tanks were collected and appeared to be pure petroleum product with no visible water. These samples were not analyzed.

- Staging of Landfill Drums (November 20, 1986).

  The landfill contained 61 containers visible from the surface which were loaded or winched to the asphalt drive. To minimize the possibility of tracking contamination, equipment was staged and washed on the asphalt drive before being moved to the shipping building. This allowed equipment and personnel to be decontaminated of possible wastes before movement was made to other parts of the complex.

- Sampling of Remaining Materials (December 5, 1986).

  The above 61 containers were sampled and catalogued for further analysis.

- Disposal of Empty Containers (December 5, 1986).

  Forty-eight empty containers were loaded and disposed of at West County Disposal, P. O. Box 428, Valley Park, Missouri, 63088.

- Initial Disposal of Solid Materials (December 17-18, 1986).

  After review of manufacturing material safety data sheets and lab analyses, an additional 50 containers of various materials were disposed of at West County Disposal.

- Removal of Water and Oil from Pits (December 21, 1986).

  The oil layer was removed by using Type 151 sorbent pads and placed in double 4-mil plastic bags. After review of lab analyses, Bernard Rains, Manager of Industrial Pollution Control, St. Louis Metropolitan Sewer District, approved disposal of the remaining water at the Bissell Point Plant. The waste sorbent was solidified on January 6-7, 1987, and was approved for disposal by MDNR on February 18, 1987, and was disposed of as a special waste solid at West County Disposal on March 10, 1987.

- Remaining Materials Stored (December 18, 1986).

  Various materials pending identification and disposal were loaded onto a 40-foot trailer for secure storage and subsequent transport.

- Liquid Loading for Disposal (January 23, 1987).

  Once approved for disposal, the remaining materials were loaded for transport to disposal facilities as follows:

- Sixteen containers of various petroleum products were combined to make 8 drums which were reclaimed by Kiesel Oil, 4801 Filer, St. Louis, Missouri.

- Van Waters and Rogers, 8925 Seeger Industrial Drive, Berkeley, Missouri, a registered hazardous waste storage facility, approved storage of 4 drums of hazardous waste at their facility until ultimate disposal is completed. These drums contained a variety of wastes including paint solids, flammable solids, liquids, and corrosives.

  Twelve containers were combined into 2 drums and were incinerated on February 3, 1987, at McKesson Envirosystems, a division of Van Waters and Rogers.

  Two drums were awaiting shipment for Ensco, 1015 Louisiana Street, Little Rock, Arkansas, for incineration at this time.

  Because of no market resale, 6 containers of the original product containing two kinds of paint and roofing patch were given away.

  Eight remaining drums of a hard, tar-like substance are pending written approval by MDNR as a special waste. Lab analysis confirmed these materials as nonhazardous.

- Discrepancy in Storage Requirements (December 22, 1986).

  After an initial verbal approval to store the remaining wastes at a second corporate site in St. Louis, the MDNR refused to issue a written statement. The MDNR also ruled the wastes could not be moved to any site except an approved hazardous waste storage facility. All local storage facilities refused to accept the waste. Van Waters and Rogers agreed to store any wastes once lab analyses were reviewed and the waste was approved for disposal at one of their disposal facilities.

On March 6, 1987, a Remedial Action Report for the site was completed by REACT, St. Louis, Missouri. This report is on file at the MDNR, SLRO, and Waste Management Program (WMP), Jefferson City office. The report delineates action conducted by REACT as directed by Abex to assess the compliance status of the site and remove various materials from the site. The action consisted of testing for hazardous waste at specific locations at the site. According to REACT, no hazardous materials contamination was detected. Four drums of products used in the production process and a large amount of solid wastes were properly disposed of during the action. REACT did not conduct a subsurface, groundwater, or underground tank investigation during this action.

The Region VII EPA tasked the Ecology and Environment, Inc., Field Investigation Team (E&E/FIT) through Technical Directive Document (TDD) No. F-0-7-8804-040 to conduct a PA re-evaluation of the Abex Corporation site, located in Wellston, Missouri.

The recommendation made at the time was that the present status and condition of the facility be determined and that samples be collected from the sand dump to determine if any contamination exists. All work on this site could be conducted on a low to medium priority (SI) basis.

On August 15, 1989, a Closure Report for 7 underground storage tanks at the site was completed by REACT. According to REACT, the tanks were removed in accordance with state and federal regulations.

On August 17, 1989, a Hydrogeologic Report on the site was completed by Ms. Mimi Garstang, MDNR, Division of Geology and Land Survey.

On March 12, 1990, sampling at the site was completed by the MDNR, Laboratory Services Program (LSP). The report was completed on May 30, 1990. A total of 5 water samples, 7 soil samples, and 1 sediment sample was collected at the site. The results of the sampling were included in an August 1990 site investigation report.

On August 27, 1990, an SI report was assembled from previous file information and data obtained during a March 1990 sampling at Abex Corporations, St. Louis, facility. After a review of all available information, it was concluded that pathway assessment and targets of any contamination at this site are very limited. Further Superfund action by MDNR at this time seems unwarranted.

However as recommended by MDNR, the Missouri Department of Health needs to determine if PCB and total metals contamination at the site poses a threat to persons using the site in the future. In addition, the MDNR and Metropolitan Sewer District (MSD) need to pursue the sources of the solvent contaminants in the sewer sediment which cannot be traced to the site from the sample analysis provided. The MSD may also want to pursue Abex to reduce PCB contamination into its sewer system. No follow-up to date has been documented. It should also be noted that such discharge or release of PCBs into the MSD storm sewer system may be in violation of the Clean Water Act (CWA).

PATHWAY ASSESSMENT

Groundwater Pathway

Bedrock at the site is cyclic deposits of Pennsylvanian age sandstones, shales and limestones of the Cherokee Group. The uppermost bedrock unit is expected to be mostly shale with alternating thin sandstone and limestone lenses. The shale typically is tight and unfractured and exhibits moderately low permeability. Coal and clay mining were once active in this general area; more has been noted close to this site. The thickness of the Pennsylvanian age sandstones, shales, and limestones is estimated at 50-60 feet above the more permeable Mississippian age limestone that is characterized by sinkholes where exposed to weathering. The closed depression north of the Abex building has been interpreted as a potential karst feature of the Mississippian surface at depth. In that case, there would be direct recharge to groundwater from the internally drained feature. The low area could also be an excavation or borrow site, which is more likely. Groundwater would not directly receive recharge from the depression if the later case is true (MDNR 1990).

These cyclic bedrock deposits of Pennsylvanian age sandstones, shales, and limestone overlay the Maquoketa formation which is comprised of shales and shaley limestone. This is generally not an area of deep groundwater recharge. The Maquoketa Formation serves as a confining layer for downward water movement. The regional bedrock surface slopes slightly to the northeast. The Dupo Anticline pinches out to the south of the site and the Pennsylvanian bedrock surface should be relatively flat. Regional groundwater movement should be in the direction of the Mississippi River to the east-northeast. Deep aquifers in this area yield saline water. Little well usage is apparent in this vicinity (MDNR 1990).

The sample from the sand disposal area indicated contamination of the following: total barium, 410 μg/L compared to 280 μg/L in the background sample; total chromium, 94 μg/L compared to 10 μg/L in the background sample; and total lead, 68 μg/L compared to 11 μg/L in the background sample. The groundwater sample from the transformer area indicated contamination of total barium at 520 μg/L compared to 280 μg/L in the background sample.

Additionally, the groundwater sample from the sand disposal area also was contaminated with 1,1-Dichloroethane at 8.9 μg/L and 1,1,1,-Trichloroethane at 26 μg/L compared to none detected in the background sample. However, since these contaminants were not found in any other sample analysis, taken at the site, these contaminants may be migrating into the groundwater from offsite (MDNR 1990).

No targets currently exist for the groundwater pathway. All drinking water for the area is obtained from surface water intakes located on the Mississippi and Missouri Rivers (Ray 1993).

Surface Water Pathway

The local topography is characterized by moderate ridge tops with moderate to steep hill slopes. Much of the area has been extensively reshaped by cutting and filling to achieve a level surface. The Abex site is on the western slope of a hill that terminates at an urban drainage adjacent to a railroad spur. The hill slope has been graded to less than 5% slope at the site. An unnamed drainage way flows to the south 0.2 miles along the railroad spur where it joins another north to south running tributary and continues south for 0.5 miles, where it flows into the county storm sewer system. Generally, surface water from the site flows into this unnamed southerly flowing tributary, southwest of the Abex facility. An internally drained depression once existed just north of the Abex operations and it likely once received much of the surface water from the facility. (This may have been a man-made depression due to grading the fill materials for a desirable building site.) In recent times, however, the depression has been made into a parking area and paved. Surface water should continue to the west through the paved area and eventually reach the tributary. Various types of fill material have been discarded along this drainage. This drainage feature is considered gaining for the duration of its surface flow (MDNR 1990).

Two surface water samples were collected; 90-0556 was collected from the sewer upgradient, near the bag house area. Sample results would indicate that some limited migration of contaminants is occurring, however, a more substantial sampling effort would have to occur to verify if migration is occurring. Sample contaminant levels, as indicated in Table 1, are not significantly high, therefore, dilution weights or factors should be considered when evaluating this data.

A sediment sample was collected from below the storm sewer outfall and found to be contaminated with 240,000 μg/kg 2-butanone, 64,000 μg/kg methylene chloride, and 7,100 μg/kg 1,1,1-trichloroethane. These contaminants, as stated by MDNR in their March 1990 SI Report, could not be traced to the site. No background sediment sample was collected for the site. It is presumed by MDNR that the volatile organics detected are probably migrating from an offsite source.

It should be noted that a relatively high dilution weight exists for contaminants affecting the surface water pathway. This is due to the close proximity of the site to the Mississippi River and the lack of sufficient targets at or around the site. One surface water intake exists along the Mississippi River which could possibly be affected by this site, however, with the high dilution weight and possible contamination associated with highly industrialized areas, the effect on surface water by the site would be negligible (Schlosser 1993, Manning 1993).

Air and Soil Exposure Pathways

The air pathway is not considered a significant route of migration.

Sample analytical results for this report indicated surface soil contamination of PCB-1260 at the transformer and bag house areas, and in sediment below the storm water sewer. PCB-1260 contamination was 750 μg/kg (transformer), 63 μg/kg (bag house) and 220 μg/kg (sediment below sewer) compared to 28 μg/kg in an upgradient background sample taken from near the east entrance gate on Ridge Avenue. All background samples for the site were taken at this gate. No migration of PCB-1260 contamination into subsurface soil or into subsurface water at the site was indicated by the sample analysis (MDNR 1990b).

Surface soil contamination of total metals was also found at the site. The transformer area contained the following contamination of total metals; 10,000 μg/kg, arsenic, compared to 7,700 μg/kg, in the background sample; 5,900 μg/kg, cadmium, compared to 2,000 μg/kg, in the background sample; 390,000 μg/kg, chromium compared to 220,000 μg/kg, in the background sample; 380,000 μg/kg, lead, compared to 180,000 μg/kg, in the background sample. The surface soils of the bag house area contain the following contamination of total metals: 56,000 μg/kg, arsenic, compared to 7,700 μg/kg, in the background sample; 31,000 μg/kg, cadmium, compared to 2,000 μg/kg, in the background sample; 1,700,000 μg/kg, chromium, compared to 220,000 μg/kg, in the background sample; and 2,100,000 μg/kg, lead, compared to 180,000 μg/kg, in the background sample. A surface soil sample was not taken at the sand disposal area (MDNR 1990).

The surface contamination of total metals extended in the soil core samples (subsurface composite soil samples). The soil core sample at the transformer area contained the following total metals contamination: 7,600 μg/kg, arsenic, compared to 2,100 μg/kg, in the subsurface background sample; 1,300 μg/kg, cadmium, compared to 420 μg/kg, in the subsurface background sample; 16,000 μg/kg, chromium, compared to 13,000 μg/kg in the subsurface background sample; 57,000 μg/kg, lead, compared to 14,000 μg/kg, in the subsurface background sample. The soil core sample at the sand disposal area contained the following total metals contamination: 9,100 μg/kg, arsenic, compared to 2,100 μg/kg, in the subsurface background sample; 130,000 μg/kg, chromium, compared to 13,000 μg/kg in the subsurface background sample; 21,000 μg/kg, lead, compared to 14,000 μg/kg, in the

subsurface background sample. The core soil sample at the bag house area did not show significant total metals contamination (MDNR 1990, MDNR 1990b).

Summary

The Abex Corporation (Abex) site is a tract of land that was used as a secondary steel foundry from 1923 to 1982. During operation, the foundry stored wastes generated during operation in piles on the ground prior to offsite disposal.

Because of uncertainties concerning hazardous waste at the Abex site, the MDNR conducted sampling and investigations at the site to determine the presence or absence of hazardous substances and if present, what threats these hazardous substances posed.

Analyses from the sampling indicated the presence of PCB-1260 in the surface soil at the site. The analysis also indicated the presence, above background levels, of a number of total metals in the surface soil, subsurface soil, and groundwater onsite. It appears that some of the PCB contamination is migrating offsite via the drainage way sediment. The sediment also was found to contain solvent contamination that cannot be traced to the site from the sampling data. Investigations indicate that the pathways and targets of any hazardous waste contamination from the site are very limited (MDNR 1990).

MDNR Site Evaluation

The following are MDNR's recommendations based on information in the March 1990 MDNR SI Report:

> A review of all information on the site, including the Site Inspection Report indicate that both pathways for and target of any contamination at the site are very limited at this time. Further Superfund action by MDNR at this time seems unwarranted. However, the Missouri Department of Health (MDH) to determine if PCB and total metals contamination at the site poses a threat to persons using the site in the future. In addition, the MDNR and MSD need to pursue the sources of the solvent contaminants in the sewer sediment which cannot be traced to the site from the sample analysis provided. The MSD may also want to pursue Abex to reduce PCB contamination into its sewer system.

Recommendations

Since the Abex site does not significantly impact any of the pathways of concern and that there are few targets affected, CDM Federal recommends for consideration by the U. S. EPA that the Abex Corporation site be assigned the status of site evaluation accomplished (SEA). However, MDNR's original recommendation that the MDH perform an evaluation of the site may still be appropriate and therefore, warrant follow-up.

This recommendation, however, does not imply that no environmental contamination exists at the site. Contaminated soil and, most likely, contaminated groundwater are present due to a release of chemicals from the site.

If you have any questions regarding this recommendation, please contact me at 492-8181.

Sincerely,

CDM FEDERAL PROGRAMS CORPORATION

Robbie L. Parsons
Site Manager

Philip C. Dula, P.G., CHMM
Project Manager

Enclosure: SAM SIP Review Form
Figure 1
Figure 2

cc: DC
RF

ABEX.SIP

REFERENCES

1. Ecology and Environment, Inc. June 14, 1988. Comments on the Re-Assignment of the Preliminary Assessment of Abex Corporation.

2. Manning, Bruce. March 2, 1993. (St. Louis County Water Department). Personal Communication with Laura Splichal of CDM Federal Programs Corporation, Lenexa, Kansas.

3. Missouri Department of Natural Resources (MDNR). August 27, 1990. Site Inspection Report. Abex Corporation.

4. MDNR. August, 1989. Memorandum from Mimi Garstang (DGLS) to Mike Struckhoff (SLRO) Relating Hydrogeologic Information Pertinent to the Abex Site. Rolla, Missouri.

5. MDNR. March 12, 1990. Report of Investigation. Abex Corporation.

6. MDNR. February 25, 1993. MDNR Letter to Rob Parsons from William Dieffenbach Requesting Information on Rare and Endangered Species.

7. Ray, Don. March 1, 1993. St. Louis Municipal Water Supply. Personal Communication with Robbie Parsons of CDM Federal Programs Corporation, Lenexa, Kansas.

8. Schlosser, Wayne. March 2, 1993. Community Relations Manager, Illinois American Water Company. Personal Communication with Laura Splichal of CDM Federal Programs Corporation, Lenexa, Kansas.

9. U. S. Census Bureau. 1990. Summary of Population and Housing Characteristics for Missouri. Washington, D.C.

10. U. S. Environmental Protection Agency. December 27, 1991. Superfund Chemical Data Matrix for the Hazard Ranking System.

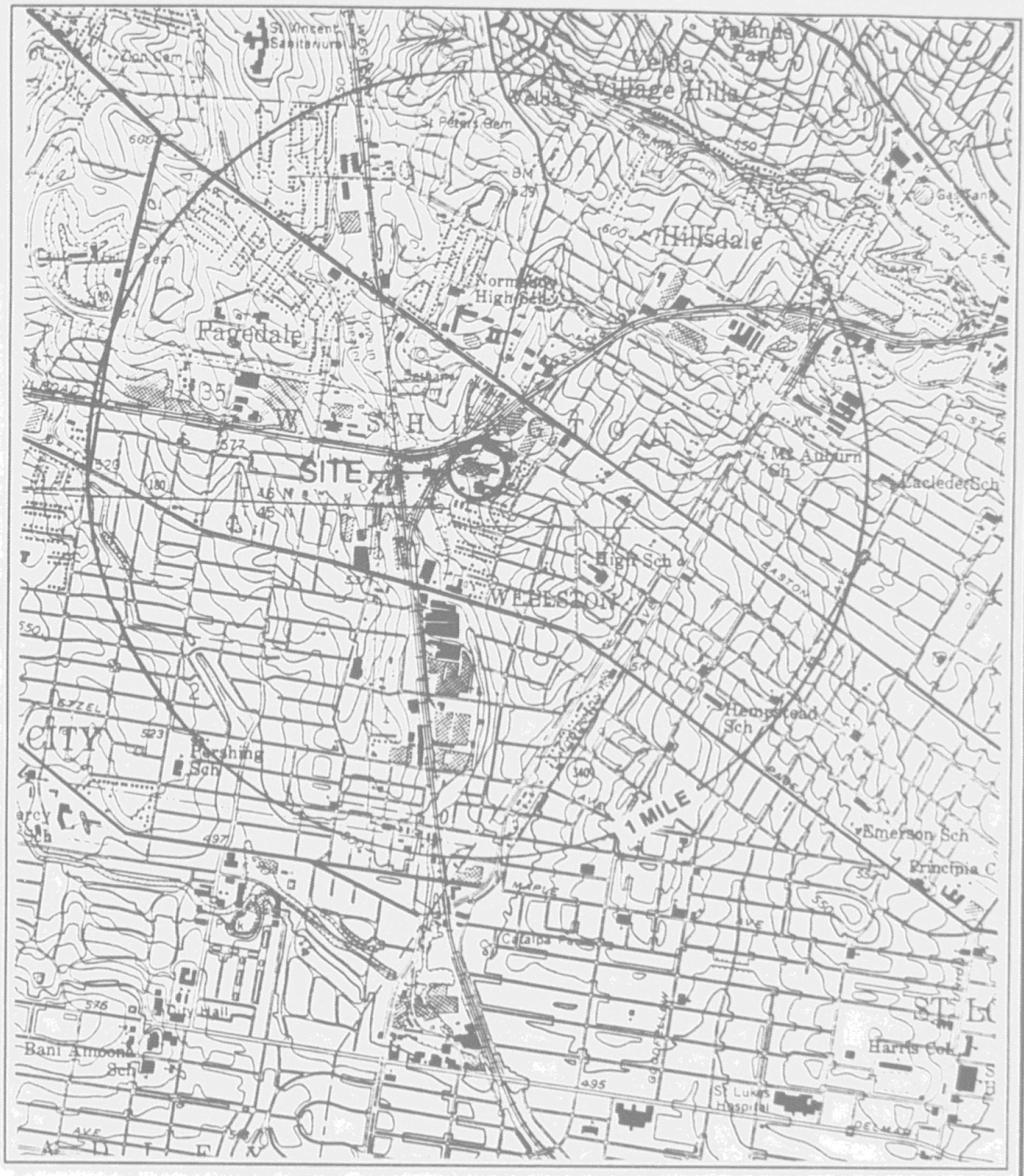
11. U. S. Geological Survey. 1954; 1982 Photorevised. Granite City, ILL-MO Quadrangle. 1954; 1974 Photorevised. Cahokia, ILL-MO; Clayton, MO; and Webster Groves, ILL-MO Quadrangles. 7.5 Minute Series Topographic Maps.

TABLE 1
Analytical Results
Site Inspection
March 1990
Abex Corporation Site
Wellston, Missouri

Sample No.	*90-0551*[1]	*90-0554*	*90-0557*	*90-0560*	*90-0552*[1]	*90-0553*	*90-0558*	*90-0555*	*90-0556*	*90-0559*	*90-0561*[1]	*90-562*	*90-563*	*90-0564*[4]
Matrix	*Subsurface Soil*				*Surface Soil*			*Sediment*	*Surface Water*		*Groundwater*			
Parameter		*µg/kg*				*µg/kg*		*µg/kg*	*µg/L*		*µg/L*			
Arsenic	2,100	7,600	9,100	5,200	7,700	10,000	56,000	6,400	ND	ND	6.7	8.0	15	NA
Barium	700,000	380,000	96,000	87,000	140,000	370,000	140,000	93,000	ND	ND	280	520	410	NA
Cadmium	420	1,300	680	750	2,000	5,900	31,000	3,200	18	12	18	7.0	2.0	NA
Chromium	13,000	16,000	130,000	22,000	220,000	390,000	1,700,000	68,000	11	11	10	25	94	NA
Lead	14,000	57,000	21,000	15,000	180,000	380,000	2,100,000	750,000	6.0	14	11	16	68	NA
PCB-1260	ND	ND	ND	ND	28	750	63	220	ND	ND	ND	ND	ND	NA
2-Butanone	ND	ND	ND	ND	ND	ND	ND	240,000	ND	ND	ND	ND	ND	ND
Me-chloride[3]	ND	ND	ND	ND	ND	ND	ND	64,000	ND	ND	ND	ND	ND	ND
1,1,1-TCA	ND	ND	ND		ND	ND	ND	7,100	ND	ND	ND	ND	ND	ND

NA = Not Applicable

1 = Background Sample
2 = VOA Blank (Trip)
3 = Methylene Chloride
4 = Trip blank (VOAs)



Source: USGS 7.5' Topographic Quadrangle. Clayton, Mo. 1974

Project No.: 7760-024	ABEX Corporation Wellston, Missouri	Site Location Map	Figure No.: 1
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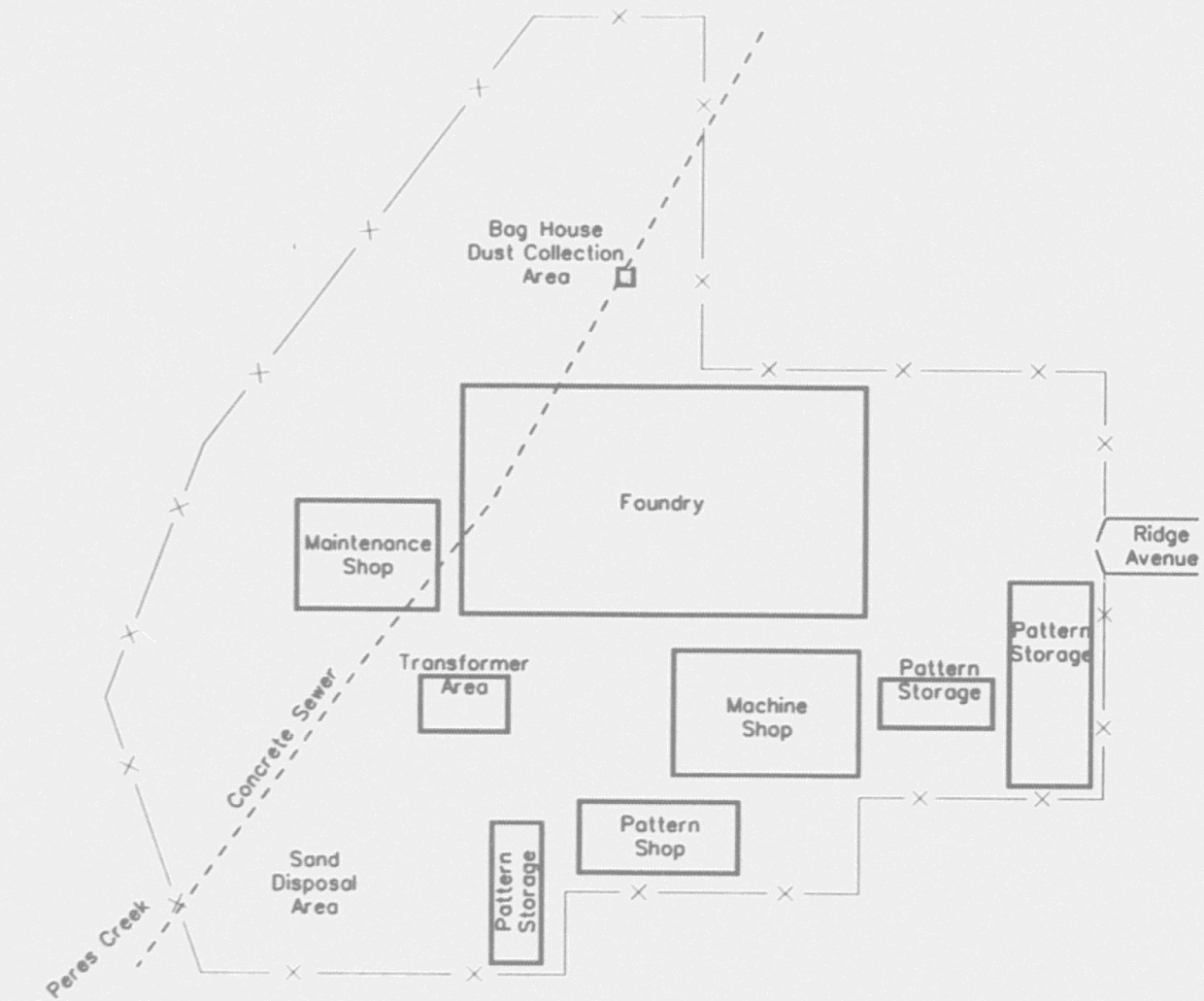

Project No.: 7760-024	ABEX Corporation Wellston, Missouri CDM FEDERAL PROGRAMS CORPORATION a subsidiary of Camp Dresser & McKee Inc.	Site Map	Figure No.: 2 3/93

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